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AN INTRODUCTION TO SCIENTIFIC VAGARIES

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HOW to account for the "crank," and what to do with him, are questions that concern the general public as well as the specialist. Restrain him? He is irrepressible. Ignore him? That may be unwise for often he is half right, sometimes wholly so. He is always disturbing, and though always abnormal he is not always unworthy, and the genus is of such infinite variety that it can never grow stale. No, the crank cannot be ignored because he is always the embodiment of notions that influence others, sometimes in large numbers; he is a type. Much depends upon the point of view. Columbus was a wise and learned man to his simple minded sailors; to companions of like temper with himself he was a daring adventurer and a hero; to the incredulous savants he was a crank.

A really normal man is one whose mental, moral and physical qualities put him in what is called "normal" relation to the age and conditions of society in which he lives; he is in harmony with his environment and lives among his fellows without discord or friction.

One who continues to shape his conduct after the pattern of his predecessors, while failing to regard the advances that have been made; who will not ride in railroad cars or tolerate instrumental music in church; who declares that what was good enough for his ancestors is good enough for him, is "behind the times"; while he who is dissatisfied with prevailing views and customs, and chafes under the restraints which they impose upon him and consequently endeavors to better them, is either a crank or is "in advance of the age." If the latter is the case only the future can prove it; sometimes it does so—it may be soon, it may be centuries later.

As the "norm" would be in perfect equilibrium under the forces acting upon him from all sides, any excess or defect of qualities in an individual not thus normal, would leave him unbalanced. Just how far or in how many respects he may depart from the normal without being generally regarded as erratic, is indeterminate, but there are few persons who have not some crotchets, and those few we consider uninteresting and expect no especial achievement from them. It is only to the abnormal that we can look for any disturbance of an established order, whether for good or ill. Of these, some are a little out of line (but only a little) on many subjects; others are out of line on one

subject only, but very much out; they may be very right in general, and yet on some one topic their aberration may amount to mania. The crankiness that crops out in various fields of endeavor often exhibits surprising acumen, shrewdness, and insight, coupled with defects of reasoning no less remarkable. All this is trite, of course, to the alienist. Probably an expert in any profession encounters and could cite instances of such aberration related to his own profession, and these might all be classified. In any one branch of science they would make a formidable array, but it may be that they are all ultimately psychological. Sometimes the purely psychological aberration affects chiefly the actor himself, as in "New Thought" and such systems; and sometimes, when the performer is dishonest, it is meant to affect his victims, as in the Keely Motor and devices of that nature.

It is exhilarating to read the propaganda of strange cults among the announcements of Sunday services in the Saturday afternoon or Sunday morning newspapers of any large city. Employing various tricks of phraseology, especially alliteration, they fall readily in step with Mother Goose's rhymes or suggest the Mark Twain jingle:

Punch, brothers, punch with care;
League for the larger life.

Many of these "movements" are poorly disguised schemes for wheedling money from faddists—the old trick of "stealing the livery of the court of heaven to serve the devil in." While it is true that some projects once thought chimerical have been realized, and have thus justified their protagonists—at first villified as crack-brained, and then glorified as geniuses—the utterly fantastic character of other schemes shows an unquestionable wryness in the persons at work upon them. Education has been thought the cure for both moral and intellectual depravity, but the advocate of any of these absurdities would be classed as a "sport," a *lusus naturae*, which no amount of educating could convert into the norm. Why he so frequently and continually recurs is a mystery.

It is hard to tell which exhibits the greatest departure from the normal; the eager chaser after the will-o'-the-wisp, who is so wholly possessed by his idea that it becomes an obsession (that condition is abnormal even if he is sincere); the unscrupulous rogue who, by his plausibility, swindles his victims; or the admirers and victims themselves who, astute enough in general, are peculiarly susceptible to some particular form of deception, say scientific or religious, and who, along that line, are abnormally credulous and easily deceived—even in some instances pleased at being humbugged. The scientific mind is necessarily an open mind, and the over credulous imagine themselves especially scientific in their readiness to accept evidences of strange new truths. But they do not always properly weigh the evidence. An

array of testimony in the guise of facts, and of consequences that are unmistakable is often convincing before the evidence is known to be genuine, with no certainty that it means what they suppose, and least of all with any assured connection between the supposed cause and effect; and although "one swallow does not make a summer," a single fact is sometimes used to brace up a host of irresponsible and unfounded statements. There are well meaning people with a fair amount of intelligence, who will take keen interest in the pretensions of a mountebank if only he makes his claims startling or upsetting in character, and presses them with sufficient assurance and effrontery.

It is not the sincere worker whose efforts are based upon sound doctrine and real facts, and who works on in the face of discouragement, that we are considering, but the aberrant. Whatever may be his contention, his favorite method of establishing it is to challenge everything and everybody to refute it. If he is dishonest he wants notoriety and this will procure it for him, whether the challenge is accepted or ignored; if he is honest he is so far deluded that if his challenge is not accepted he is convinced that it is unanswerable, and if he is controverted he feels that, like Galileo and a noble army of predecessors, he is a martyr to the conservatism of the age which resents enlightenment. It is not always possible to take these disputants seriously, no matter how seriously they take themselves, neither is it always safe to dismiss their ideas as ridiculous, for many a wise man has been ridiculed and condemned by others less wise than himself; and we need not look upon a quotation from the Alice books as a sign of feeble-mindedness.

In speaking of the Keely motor, an English engineer and critic makes a generalization upon the psychology of Americans that is pretty broad yet perhaps not without justification. He says:

It is a peculiar psychological fact that among a people so energetic and hard headed as the Americans every imposture, depending for its success upon mystery, should find multitudes of believers. America is the home of Mormon, Christian Scientist, and a host of other sects, who each follow the leadership of a single person, it may be ignorant and impudent, or it may be of that much learning that maketh mad, but at least all agreeing in being mystics of the very first water. . . . American geese are always swans, and really Keely deserves a good deal of attention. (Henry Riddell, M. E., on "The Search for Perpetual Motion," in the Report and Proceedings of the Belfast Natural History and Philosophical Society, 1915-1916.)

Instead of indicating superstition, however, does not susceptibility to the unknown or the mysterious belong rather to the *unmatured* stage of a people, or such part of them as are not restrained by the conventions of those from whom they have become detached? To a people who, in some sense, are still pioneers, before they have grown stale, and while they retain a freshness of imagination to which they are not unwilling to give a loose rein; a condition which made Americans exuberant and bombastic, and gained for them a reputation that will require

a long time to live down. That would account for the free play of fantastic ideas among Australians as well as among Americans—ideas which usually find fertile soil in newly settled and rapidly developing countries.

Libraries serve as reservoirs into which erratic papers and pamphlets flow in streams. A typical collection of sixteen quasi-scientific pamphlets, bound together under the general title "Paradoxes," in the New York Public Library, illustrates the lengths to which such aberration may go. Several of the papers are notable, and one or two are notorious. Merely to scan the titles is enough to make one dizzy; they are not all old, some might be called recent. One or two will serve for illustration. No. 4 is:

Six General Laws of Nature—(A New Idealism)—A COMPENDIUM—of—A Large Work Divinity and The Cosmos—Containing—The Positive Cause of Force and Matter, An Explanation On All The Physical Phenomena in the Actuality of The Universe, and an Attack on the Modern Scientists and Philosophers.—Solomon J. Silberstein—New York—1894.

To judge from the weightiness of this "Compendium" the "Large Work" would be crushing. Mr. Silberstein also has another on "The Existence of the Universe—The Causation of Its Origin, etc." which sets one wondering.

The papers are most varied and fantastic; one is a rhapsody of Man, God, Geography, Electricity, Sun, Moon, and Tides, and contains the announcement of "an extensive work entitled 'A New Bible' to explain in detail the scientific principles in the above topics"! In another the Rev. John Jasper is revived and the earth is proved to be a "stationary plane circle"; the Newtonian theory of gravitation is severely handled by several of the writers; and cosmic theories are proposed by some and overthrown by others; one especially affects odd words, and another article is made up wholly of epigrams and ejaculations of two or three words each.

An attendant in an asylum for the insane, speaking of the idiosyncrasies of the patients, said that the form their hallucination would take "depended altogether on *the temperature of their minds*." (He was himself apparently somewhat mixed on temper, temperature, and temperament.) Some of the writers of these papers rival the projector in the Grand Academy of Lagado, spending his labors on a project to extract sunbeams from cucumbers.

During the Middle Ages superstition was rife in science, and vagaries abounded; in the eighteenth century a great clarifying was in progress, and by the beginning of the nineteenth extreme ideas of science were thought to have reached their acme of extravagance in seven different forms corresponding, perhaps, to the seven wonders of the world, and called the "Seven Follies of Science." This designation is itself a survival of a tendency as old as counting, to recognize some

peculiar potency in a number like three or seven (particularly seven) as magical or sacred; and this tendency may be only another instance of the very peculiarities we are setting out to consider.

The late John Phin, in "The Seven Follies of Science," distinguishes properly between fraud and honest effort to discover and utilize the secrets of nature. In so discriminating he, with others, rejects astrology and magic because they are frauds, and gives as the generally accepted list of "Follies":

1. The quadrature of the circle; or as it is called familiarly, squaring the circle.
2. The duplication of the cube.
3. The trisection of an angle.
4. Perpetual motion.
5. The transmutation of the metals.
6. The fixation of mercury.
7. The elixir of life.

I. D'Israeli, in "Curiosities of Literature," enumerates the "Six Follies of Science," omitting Nos. 3, 5, 6, and 7 of the above list, and including:

4. The Philosophical (or Philosopher's) Stone.
5. Magic.
6. Judicial Astrology.

Nos. 1, 2, and 3 above are purely mathematical and do not belong in a list that is limited to the physical sciences. The others are things to be achieved or produced by experimental processes or search and in that class come also,

8. The Universal Solvent; and 9, The Fountain of Youth. This, indeed, is only a variant of No. 7, but it has been hardly less alluring than the others.

In their relation to the existing state of knowledge these have all stood, in their day, as rational topics of inquiry, and therefore as legitimate questions to which a conclusive answer might be expected. For this reason they ought not to be called follies, for even if they may now be regarded as such it was not always so, and with as good reason we might regard as folly almost any novelty in the development of science. So we call them fallacies or foibles when we are not dealing with outright fraud; in that case we have "perversion" of science. In most instances the great difficulty has been to determine the line between honesty and deceit. Even frauds would not be excluded from foibles in all cases, for it is impossible to know how far astrologers and soothsayers came to believe in their own schemes of forecasting and divining. Charlatans and fakers have possibly been self deceived, especially in religion. Certainly some weather predictors have believed in their scheme of forecasting, even if they did not believe in themselves.

It will be seen that in the above lists, some of the subjects that have been dismissed as chimerical have been capable of reaching a phase such as science now approves, and various chimeras, once laughed out of court, have returned to make good their claim to acceptance and to serve us. As notable examples that have been realized we have aviation, self propelled vehicles, and apparently the transmutation of metals. Geographical vagaries have sometimes been of wide scope and long sustained interest as, for example, the myth of Atlantis, the Northwest Passage, the Fountain of Youth, El Dorado, Symmes' Theory of Concentric Spheres, and still others. In 1492 the spherical form of the earth was a foible of Columbus.

An announcement of any startling achievement for which the public has not been prepared by gradual approach, is almost certain to encounter incredulity. Today the X-rays are commonplace, yet not only laymen but professional physicists were skeptical of them when the first announcements of them were received in this country. A final solution of the great problems of physics and chemistry, such as gravity, heat, electricity, radiation, etc., involves the ultimate nature of matter—itsself the greatest problem of them all—and while the search for its solution continues vagaries will certainly come and perhaps go. No innovation that appears to be subversive of established ideas can acquire a standing without overcoming opposition in various forms, and one of the earliest and most effective forms that it has to encounter is ridicule or satire. But it has happened more than once that the chief fault with the innovation was that it was premature; and while in such case it needs great vitality to survive the ridicule with which it is met, if it is really true it is likely to reappear after an eclipse. Does it necessarily follow, however, that if it reappears it is really true? That has occurred with some systems of divining that have been scouted by orthodox scientists. Nevertheless, doctrines that have stood as sound science in their day, reached maturity and flourished, which died and were buried, may yet be awaiting resurrection. Some of them, if they were now being promulgated for the first time, would be either ignored or laughed at in the light of modern knowledge which would show their fallacy. Again, apparently defunct notions have been resuscitated and revamped and brought into harmony with present day knowledge and practice, have been shorn of excrescences that deformed them and stripped of dress that disfigured them; and in consequence, doctrines that had been rather fantastic have received a real scientific character, and truths that had fallen into disrepute may have been rescued. This seems to be the case with physiognomy. Some vagaries are veritable Banquo's ghosts and will not down. Insuppressible and irrepressible, with these revival takes the place of survival, and they return again and again to plague one, or else to establish finally an indisputable right to live. Reversing the usual order, the follies of one generation

have sometimes become the wisdom of the next. But it is not easy to escape contamination with bad associates, and upon any recurrence of old vagaries, even if they come bearing the promise of reform, they are apt to be put in the same class with new ones. Of these we have a superabundance in the shape of New Thought, Faith Healing, The Power of Will, etc., crowding the advertising columns of newspapers and magazines. What with short cuts to success, and marvelous methods of increasing one's power in all lines of endeavor, along with the ability to read character at sight, it would seem as if there were no excuse for anybody with moderate ability to stop short of the topmost rung in the ladder of Fortune or indeed to rest with only moderate ability. The situation is hit off well in an editorial of a current periodical:

Life as it is lived by the rest of us must seem like loafing to those who have had their memories trained so that they can get the telephone book by heart in an evening, who have studied the science of physiognomy until they can place a passing stranger at a glance, and who have mastered the secrets of will power to such an extent that it is folly to dispute their purposes. Existence must appear a strangely pallid affair to you when there is no occasion to which you are not equal and when you have reduced the problems of every day to a series of logarithms, and locked them fast in an unshakable memory. (*The Globe and Commercial Advertiser*, New York, Nov. 12. 1919.)

While some of the old "Follies" persist, the progress of science has brought new ones to the fore and has focused attention upon wonders of a kind that did not—could not—enter the minds of the ancients. Whether the elixir of life, the fountain of youth, or the universal solvent has passed out of question or not, perpetual motion still engages the attention of inventors. The fact is, the thing that has become known and established has ceased to inspire the researcher. He is ready to pass that on to the utilizer, while his imagination revels in chimeras. A world consisting entirely of known facts would be as fatal to imagination as an arid world to vegetation.